

Offices of the County Executive • 101 Monroe Street • Rockville, Maryland 20850

Subject	Regulations Adopting and Amending Certain Standards of the National Fire Code Regarding Fire Protection Systems	Number 6-06
Originating D	epartment  Montgomery County Fire and Rescue Service	Effective Date

Montgomery County Regulation on:

FIRE SAFETY CODE - FIRE PROTECTION SYSTEMS
Montgomery County Fire and Rescue Service

Issued by: County Executive Regulation No:

Authority: Code Section 22-13
Supersedes: Executive Regulation 10-97
Council Review: Method 2 under Code Section 2A-15
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Effective date:
Sunset date: None

SUMMARY: The proposed regulation adopts, amends, and/or updates certain editions

of the National Fire Codes and Standards related to fire protection systems. This regulation applies to all buildings and structures within

Montgomery County's jurisdiction.

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BACKGROUND: This regulation supersedes Executive Regulation 10-97. Its purpose is to

adopt currently published standards of the National Fire Codes and amend them to be consistent with Maryland and Montgomery County

laws.



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- Sec. 1 In accordance with the procedures authorized in Chapter 22, "Fire Safety Code", of the Montgomery County Code, 1994, the following Executive Regulation applies to the design, installation, and maintenance of fire protection systems in buildings or structures. It supersedes Executive Regulation 10-97, dated September 29, 1997. Where there are differences between this regulation and the Montgomery County Building Code, the more restrictive provision(s) will apply.
- Sec. 2 All references to the National Fire Codes and standards adopted in these regulations are to those codes, standards, recommended practices, and manuals in the National Fire Codes, published annually by the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269. Unless otherwise noted, all references are to those codes and standards published in the 2003 edition of National Fire Protection Association's Uniformed Fire Code (NFPA 1) and are adopted in their entirety.
- **Sec. 3** Fire Protection System Permit. A permit must be obtained from the director to operate any fire protection system in any building or other structure, except one and two family dwellings. Fire protection system means any fire alarm device or system, or suppression device or system, which is designed and installed for detecting, controlling, or extinguishing a fire or otherwise alerting occupants or the fire department, or both that a fire has occurred, or supporting or utilized by fire department personnel to suppress a fire upon their arrival.
  - (a) Fire protection systems must be inspected and approved at time of installation and annually thereafter. A permit will be issued upon approval of the system.
  - (b) A fire protection systems permit must be obtained prior to installation of any kitchen cooking equipment suppression system.
- **Sec. 4** Fire Protection System License. A contractor or person responsible for the installation, modification, service, or third-party inspection of any fire protection system or any portion thereof in Montgomery County, must obtain and carry on their person a license from the director subject to the following criteria:
  - (a) Qualifications required.
    - (1) Residential license (13D and 13R sprinkler systems): National Institute for Certification of Engineering Technologies (NICET) Level II Certification, Registered Professional Engineer Certification, or other nationally recognized certification as approved by the director.



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- (2) General license (all other fire protection systems): National Institute for Certification of Engineering Technologies (NICET) Level III Certification, Registered Professional Engineer Certification, or other nationally recognized certification as approved by the director.
- (b) When provided, certification by the system manufacturer for systems other than sprinkler systems.
- (c) Proof of financial stability.
- (d) Demonstrated competency in Montgomery County requirements.
- (e) Licenses will be subject to annual renewal.
- (f) The director shall have the power to rescind these licenses for good cause.
- Sec. 5 Maintenance of Residential Sprinkler Systems. All leases will have the following provision: "Sprinkler System. In units equipped with fire sprinkler systems, no portion of the system is permitted to be changed or altered except by a licensed, certified sprinkler installer. Sprinkler heads must not be painted, covered, or otherwise obstructed. Prior to any alteration of the sprinkler system or any changes, additions, or removal of partitions, or walls, plans must be submitted to the Department of Permitting Services".
- **Sec. 6** Smoke Control System shop drawing submittals shall include:
  - (a) Plans and specifications
  - (b) Engineering calculations and/or computer model
  - (c) Floor plans
  - (d) System diagrams and details
  - (e) Sequence of operations and control layout
  - (f) Preliminary test procedures
  - (g) Acceptance test procedures
  - (h) Pass/fail criteria
- **Sec. 7** NFPA 12A is amended by the addition of: Halon systems are not permitted to be installed as required protection in accordance with state and/or local building or fire codes due to the environmental impact of discharge testing, the lack of adequate alternative test methods, and availability of alternative agents such as carbon dioxide.
- **Sec. 8** NFPA 13, paragraph 8.1.1 is amended by the addition of new paragraph (7) as follows:
  - (7) Sprinklers are required in attached balconies or porches unless at least 50 percent of the longest exterior side is open to the atmosphere.



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- **Sec. 9** NFPA 13, paragraph 8.4.5.1 is amended by the addition of: Listed residential sprinkler heads must be used in dwelling units except Detention and Correctional occupancies.
- **Sec. 10** NFPA 13, paragraph 8.14.7.5 Sprinklers are not required under noncombustible or limited exterior canopies over drive up windows. Any canopy with vehicle access below shall have protection beneath.
- **Sec. 11** NFPA 13, paragraph 8.14.10.3 (protection of electrical equipment rooms) is amended by deletion in its entirety.
- **Sec. 12** NFPA 13, paragraph 8.14.19.1 is amended as follows: In new installations expected to supply sprinklers below a ceiling and in any speculative areas subject to tenant changes, minimum one inch sprinkler outlets must be provided.
- **Sec. 13** NFPA 13, paragraph 8.14.19.2 is amended as follows: after the word "bushings" delete everything and replace with "for hydrostatic testing only, and must be removed prior to the occupancy of the space."
- **Sec. 14** NFPA 13, paragraphs 8.15.1.1.1 and 8.16.1.1 are amended by the addition of the following: When a sprinkler system serves more than one level, each level must be consistently and separately valved by a listed and approved control valve. In addition, where a sprinkler system is required to activate a local building fire alarm system, the sprinkler system must have a separate and distinct water flow detecting device for each floor and zone.
  - Exception 1: In buildings not exceeding three floors and 3000 square feet per floor.
  - Exception 2: Unoccupied and unused attics may be zoned with the level below.
  - Exception 3: Mezzanines not exceeding 3000 square feet in area.
  - Exception 4: Detention and correctional facilities.
- **Sec. 15** NFPA 13, paragraph 8.16.2 is amended by the addition of the following requirements for fire department connections:
  - (a) Must be located within 100 feet from a free standing (not wall type) hydrant, and between 18 and 48 inches from grade to the centerline of the inlets.



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(b) Number of 2 1/2 in. inlets:

System Demand (gpm)	No. of Inlets
up to 749	2
750-999	3
1000 and above	4

- (c) Multiple connections for the same building must be interconnected.
- (d) When a section of a building is fed by a connection (i.e., partial systems), permanent all weather identification signs must be provided on connections.
- (e) Must be sized at least as large as the main sprinkler system riser pipe or the fire pump discharge line, whichever is larger.
- **Sec. 16** NFPA 13, paragraph 11.1 is amended by the addition of: Calculations for new systems or new portions of systems must meet the criteria below.
  - (a) Highest hazard and most demanding use allowed by building construction permit or property zoning.
  - (b) Storage use: Available storage height for high storage of a class 4 non-encapsulated material.
  - (c) Laboratory use: ordinary group 2 for class A, B, or C labs.
  - (d) All uses: 20% safety factor. For systems without a pump, this is based on the demand pressure only at the supply point. For systems with a pump, this is based on both the demand pressure and demand flow at the pump discharge. All design options, except grids, must be explored.

Exception to safety factor only: Owner occupied buildings can have lower safety factor if a pump would be necessary to achieve the 20%.

- **Sec. 17** NFPA 13, paragraph 11.2.3.5.1 is amended by the addition of the following: The number of design sprinklers shall be at least 5 under ceilings which are not flat, smooth and level unless specifically listed for a four sprinkler design area.
- Sec. 18 NFPA 13, paragraph 15.1.2 is amended by the addition of the following: Pressure and flow availability as determined by a public utility must be used for new taps. Pressure and flow availability for existing taps must be determined by an interior flow test. In any case, the supply information must be corrected for the low hydraulic gradient. Booster pumps and pump/tank supplies must only be used where it is demonstrated that the public water supply is inadequate.



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- **Sec. 19** NFPA 13D, paragraph 1.1 is amended by the addition of the following: This standard also applies to Day care homes containing 12 clients or less if located within converted one and two family dwellings or townhouses.
- **Sec. 20** NFPA 13D add new paragraph:
  - **5.1.4** Where a dedicated sprinkler booster pump is provided the following must be met:
  - (1) Pumps shall not sit directly on the floor.
  - (2) Pumps shall be powered from the house electrical service by a nominal 220-240 circuit as required by Montgomery County Electrical Code.
  - (3) Power at the pump shall be supervised passively by motor disconnect within sight that also controls a lighting circuit for other than a stair or pump room.
  - (4) Sprinkler system shall be connected to a bathroom toilet to create a passive purge system.
  - (5) Pump shall be connected to a time delay relay (run timer).
- Sec. 21 NFPA 13D, paragraph 6.1 is amended by the addition of the following: Pressure and flow availability as determined by a public utility must be used and must be adjusted to the low hydraulic gradient. Booster pumps and pump/tank supplies may only be used where it is demonstrated that the public water supply is inadequate as determined by the director.
- Sec. 22 NFPA 13D, paragraph 6.2: Add section (5) Well pumps
  - (5) A well pump with sufficient capacity and pressure to meet the sprinkler system demand. The stored water capacity of sections 6.1.2 and 6.1.3 shall be permitted to be a combination of the water in the well (including the refill rate) plus the water in the holding tank if such tank can supply the sprinkler system.
- **Sec. 23** NFPA 13D add new paragraph:
  - **6.2.1** Where a water storage tank(s) is provided the following shall be met:
  - Tank shall be provided with an automatic filling valve (float valve or equivalent).
  - (2) A method of seeing the water level in the tank shall be provided without having to open the tank.



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- **Sec. 24** NFPA 13D paragraph 6.2 (4) add new sentence: "A valve must be provided for routine testing of the pump."
- **Sec. 25** NFPA 13D, 7.1.2 is amended by deleting "the" in the beginning and adding "fed by a tank" after piping.
- **Sec. 26** NFPA 13D, section 7.5.5.1 is amended by adding the following: Where possible to maintain listed coverage, sprinkler heads shall be positioned so as to eliminate the need to install sprinkler heads of a higher temperature rating.
- **Sec. 27** NFPA 13D, paragraph 7.5.5 is amended by adding new paragraph 7.5.5.4 to read:
  - **7.5.5.4** Dry type sprinklers must be used in areas which are not heated to at least 40 degrees F.
- **Sec. 28** NFPA 13D, paragraph 8.1.2 is amended by the addition of the following: The number of design sprinklers shall be at least three under ceilings which are not flat, smooth, and level, unless specifically listed with a two sprinkler design area.
- **Sec. 29** NFPA 13D, paragraph 8.2.4 is amended as follows: Obstructions:
  - (a) Sprinklers must be positioned so that response time and discharge are not adversely affected by features such as sloped ceilings, beams, lights, and fan motors.
  - (b) Unprotected bulkheads or soffits behind the spray of sidewall sprinklers must not exceed 8 inches in width.
  - (c) Sprinkler heads in closets must not be located directly above shelves.
- **Sec. 30** NFPA 13D, paragraph 8.4 is amended by the addition of the following: All calculations must include at least a 10% safety factor to account for minor field changes, unless a booster pump would become necessary to obtain this safety factor.
- **Sec. 31** NFPA 13D, paragraph 8.6.4 is amended by adding the following after garages: "...unless located partially or wholly beneath living space."



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- Sec. 32 NFPA 13R, paragraph 6.5.3 is amended by the addition of the following: Pressure and volume availability as determined by a public utility must be used, when required by the director, and must be adjusted to the low hydraulic gradient. Booster pumps and pump/tank supplies may only be used where it is demonstrated that the public water supply is inadequate.
- **Sec. 33** NFPA 13R, paragraph 6.6.4.1 is replaced to read as follows: In all apartment buildings, a single 2 1/2 in. fire department connection with a feed line sized at least as large as the main system riser must be provided when the system has 20 or more sprinklers. The fire department connection must be located on a street front and be 18 to 48 inches from the centerline of the inlet to finish grade. Paragraph 6.6.4.2 is deleted.
- **Sec. 34** NFPA 13R, paragraph 6.7.1.2 is amended by the addition of the following: The number of design sprinklers shall be at least five under ceilings which are not flat, smooth and level unless specifically listed with a four sprinkler design area.
- **Sec. 35** NFPA 13R, paragraph 6.7.1.5.3 is amended as follows: Obstructions:
  - (a) Sprinklers must be positioned so that response time and discharge are not adversely affected by features such as sloped ceilings, beams, lights, and fan motors.
  - (b) Unprotected bulkheads or soffits behind the spray of side wall sprinklers must not exceed 8 inches in width.
  - (c) Sprinkler heads in closets must not be located directly above shelves.
- **Sec. 36** NFPA 13R, paragraph 6.7.4 is amended by the addition of the following: All calculations must include at least a 10% safety factor to account for minor field changes, unless a booster pump would become necessary to obtain this safety factor.
- **Sec. 37** NFPA 14, paragraph 4.7.2 is amended as follows: Each fire hose valve shall be provided with 2 1/2 in. valved hose connections, 2 1/2 in. to 1 1/2 in. reducers, caps, and chains.
- **Sec. 38** NFPA 14, paragraph 5.1.2 is amended by adding the following:
  - (1) Systems shall be automatic wet type.



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- (2) Standpipe systems in unheated areas shall be automatic dry type.
- (3) Standpipe systems in detached open parking garages may be the manual dry type, if the piping is air supervised for breaks or open valves.
- (4) Occupant use hose is prohibited in new or existing buildings.
- (5) New standpipe systems shall be Class I only.
- **Sec. 39** NFPA 14, paragraph 6.3 (Fire Department Connections) is amended by the addition of the following:
  - (1) Must be located within 100 feet from a free standing (not wall type) hydrant.
  - (2) Number of 2 1/2 in. inlets:

System Demand (gpm)	No. of Inlets
up to 749	2
750-999	3
1,000 and above	4

- (3) Multiple connections on the same building must be interconnected.
- (4) When a section of a building is fed by a connection (i.e., partial systems), permanent all weather identification signs must be provided on connections.
- **Sec. 40** NFPA 14, paragraph 7.3.2.3 is amended by the addition of the following:
  - (1) Measurement must be parallel or at right angles to walls.
  - (2) Supplemental hose valves outside the stairs must not be located within tenant spaces, unless hose reach requirements cannot be met by placement of valves in public corridors or by use of wall hydrants for spaces opening to the exterior. Hose valve locations must be marked by the placement of signs, the striping of columns, or other approved methods.
- **Sec. 41** NFPA 14, paragraph 7.8.1.1 is amended by the addition of exceptions as follows:

Exception 1: In high-rise buildings, where booster pumps are necessary to produce the required residual pressures, pumps and piping systems must be sized to provide for the demand of the hydraulically most remote hose station, or the sprinkler system demand, whichever is greater. The standpipe system must also be sized to provide the required flow and pressure for all hose stations required to be flowing, when supplied by 150 psi at 1000 gpm at the fire department connection(s). Two sets of calculations will, therefore, be required under this exception.



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Exception 2: Systems in buildings that are not high-rise, and dry systems with no automatic water supply, may be sized to obtain the required flows and pressures, when supplied by 150 psi at 1000 gpm at the fire department connection(s).

Exception 3: In existing buildings, after shell occupancy, hose valves added to correct reach violations created by tenant modifications may be supplied by 3 inch pipe without recalculation.

- **Sec. 42** NFPA 20, paragraph 5.14.6.4 is amended to add a new sentence: Eccentric reducers will be installed with the flat side on the bottom when fed directly from above.
- **Sec. 43** NFPA 20, paragraph 5.18.1.2 is amended to add: A relief valve may be installed to reduce operating pressure below 175psi at high gradient.
- **Sec. 44** NFPA 20, paragraph 5.18.7 is amended entirely to state: Relief valves shall not be piped back into the source of the supply.
- Sec. 45 NFPA 72, paragraph 4.4.6.1 is amended by the addition of the following sentence: An annunciator with the following features is required when the building is greater than one story, over 20,000 square feet in area per floor, or has more than one type of alarm initiating device.

Exception 1: Apartments protected by a 13R sprinkler system.

Exception 2: Any building not exceeding two stories above grade and 3,000 square feet per floor.

- (a) Annunciator must have a visible signal for each different floor, zone, and device type. Supervised computer screen or printer type annunciators may be used to meet this requirement if the zone identification is approved by the director.
- (b) Zones must not exceed a single floor, 20,000 square feet, or 300 linear feet. Sprinkler systems may be zoned in accordance with the applicable sprinkler standard.
- (c) If two or more zones per floor are required, provide a graphic outline on or adjacent to the annunciator showing the building outline, zone boundaries, "you are here" notation, north compass arrow, all stairways, stairway identification numbers, all standpipe risers, elevators, and the building address.
- (d) A lamp type annunciator must have a lamp test switch unless the annunciator circuits are supervised.



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- (e) The annunciator must be located at, and visible from, the main fire department entrance.
- (f) If two or more buildings are controlled by one alarm system, an annunciator must be installed in each building with a pilot lamp indicating the building of alarm origination.
- **Sec. 46** NFPA 72, is amended by adding new paragraph 5.7.3.2.5 as follows:
  - **5.7.3.2.5** Detectors which activate required extinguishing systems on a cross-zoned or multiple-zone basis must be spaced at a maximum of one-half of their allowed or listed square footage spacing.
- **Sec. 47** NFPA 72, paragraph 5.7.4.2.2 is amended by adding: Activation of duct smoke detectors must sound an audible alarm in a normally occupied area or through the building fire alarm system, and must be identified as duct detector trouble. If connected to the building alarm, the signal must be supervisory only and must not initiate the building evacuation alarm unless a confirmation or verification feature is provided to minimize unwanted alarms.
- **Sec. 48** NFPA 72, paragraph 5.7.1.7 is amended as follows: Detectors located at the top of shafts and stairs must be on a supervisory circuit only unless a confirmation or verification feature is provided to minimize unwanted alarms. The location must be identified at the annunciator or fire alarm control panel.
- **Sec. 49** NFPA 72, paragraph 5.10.2 is amended by the addition of the following: Standpipe or main water flow indicators, if provided, must sound a supervisory signal only.
- Sec. 50 NFPA 72, the second sentence under paragraph 5.12.4 is changed to read "The center of each station must be between 42 and 48 inches above the floor level." Also, this paragraph shall be amended by the addition of the following: Approved "911" instruction signs must be permanently affixed and maintained at each manual fire alarm station, unless the fire alarm is monitored by a UL listed central station.
- **Sec. 51** NFPA 72, paragraph 6.9.9.14 is amended as follows: At least six handsets shall be provided in the fire control room.
- **Sec. 52** NFPA 72, paragraphs 11.5.1.1, 11.5.2.1, and 11.5.4.1: delete the exception for each section.
- **Sec. 53** NFPA 72, paragraph 11.5.6.1 (4) is deleted.



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- Sec. 54 NFPA 72, paragraph 11.5.8.1 (2), delete the exception.
- Sec. 55 NFPA 72, paragraph 11.5.12.1 (2), delete the exception.
- **Sec. 56** NFPA 72, paragraph 11.8.3.5, add new paragraphs (10) and (11):
  - (10) Separate entrances to sleeping rooms must be protected separately unless the door leads only to a bathroom or clothes/linen closet
  - (11) Enclosed rooms such as dens, libraries, studies, or sitting rooms which could be used as a temporary sleeping area must be treated as bedrooms.
- **Sec. 57** Severability. If a court of final appeal holds that any part of this regulation is invalid, that ruling does not affect the validity of other parts of the regulation.

This regulation becomes effective upon adoption by the County Council.

Approved,		
Douglas M. Duncan		
County Executive		